

Customer :	CU-DAR001	Dart Helicopters Services	Drawing Name :	212/205 HIGH AFT X-TUBE ASSEMBLY		
Job Number :	30420					
Estimate Number :	10257					
P.O. Number :	N/A		Part Number :	D212664201		
This Issue :	1/24/2007	S.O. No. :	N/A	Drawing Number :	D212-664-241 REV B	
Prsht Rev. :	NC			Project Number :	N/A	
First Issue :	N/A	Type :	LANDING GEAR	Drawing Revision :	B	
Previous Run :	29531		Material :	N/A		
Written By :	[Signature]		Due Date :	2/28/2007	Qty:	1 Um: Each
Checked & Approved By :	[Signature]					
Comment :	Est Rev:E 04.02.16 Reformat J/DS					
	Est Rev:F 06-03-29 Remove Coments on Pick List JLM					

[illegible]

~~DOCUMENT CONTROL~~

Photocopy bluefile and create labels as per PPP D212-664-201CHG002

Crosstube material

Check OD = 3.250"; ID = 2.220"

MORI SEIKI CNC LATHE LARGE


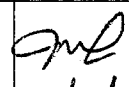


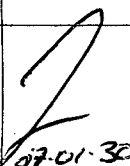
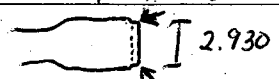
3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241.

INSPECT ALL DIM TO DIM SHEET

**Comment:** INSPECT ALL DIM TO DIM SHEET

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: D Date: 07/01/06  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
070130	3.2	1st side very end of cuff. During the 1st operation to machine the cuff, the tool offset wasn't back far enough, resulting in the tip of the cuff being machined .030 too deep, & .218 long up into the cuff. Operator error.		<del>cuff tube is acceptable.</del> <del>offsets are re-adjusted.</del> TRIM 0.218 OFF BOTH CUFFS ALERT BENDS SO THAT THEY CAN BEND TOP A LITTLE BIT MORE TO BRING ENDS DOWN.	 07/04/20	 07-04-20	 07-05-17	 07-01-30
		 2.930						

NOTE: Date & initial all entries

Date: Wednesday, 4/20/2007 4:43:51 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH AFT X-TUBE ASSEMBLY

Job Number: 30420

Part Number: D212664201

Job Number:



Seq. #:	Machine Or Operation:	Description :
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5.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
-----	------------	----------------------------



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA114

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241. *ml 07/01/30* 1

6.0	QC1	INSPECT ALL DIM TO DIM SHEET
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Comment: INSPECT ALL DIM TO DIM SHEET

*ml 07/01/30* 1

7.0	QC8	SECOND CHECK
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Comment: SECOND CHECK

*Fr 07/01/30* (1)

8.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
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Comment: MORI SEIKI CNC LATHE LARGE

1-Remove sand and plugs

2-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-241. *ml 07/01/30* 1

9.0	LANDING GEAR 1	LANDING GEAR RESOURCE 1
-----	----------------	-------------------------



Comment: LANDING GEAR RESOURCE 1

1-Polish entire outside surface of crosstube

*JB 7-7-27*

10.0	QC5	INSPECT WORK TO CURRENT STEP
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Comment: INSPECT WORK TO CURRENT STEP

*En 07/01/30*

11.0	HAND FINISHING1	HAND FINISHING RESOURCE #1
------	-----------------	----------------------------



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1 within 24 hours of machining

*SR 7-9-28*

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Wednesday, 1/24/2007 4:43:51 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH AFT X-TUBE ASSEMBLY

Job Number: 30420

Part Number: D212664201

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

QC5

INSPECT WORK TO CURRENT STEP



*207-09-28*



Comment: INSPECT WORK TO CURRENT STEP

13.0

BENDING

BENDING MACHINE



*\* See the PTO @  
Sequence 3.0*



Comment: BENDING MACHINE

Bend tube as per Dwg D212-664-241 using CNC bender program 212-af and Folio FT007

*EL 7-10-16*

14.0

QC6

DIMENSIONAL CHECK



*7-10-16 (1)*



Comment: DIMENSIONAL CHECK

15.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551

2-Ream hole to finish size in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241

*EL  
7-10-16  
JD 7-10-17*

16.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1 within 24 hours of bending and drilling

*JD 7-10-17*

17.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

*EL 7-10-18*

18.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

*EL 7-10-18*

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES


Liquid Penetrant Inspection as per QSI 038

Issue P/O: *4852*

*CL07110118 (1)*

H:\FORMS\Quality Assurance\approved QAINCRWO RevD

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
07.10.22	27	INSTALL SUPPORTS USING DSSS RUBBER CUSHION AND MAGNOBOND PER REV C OF DWG				 07.10.22 J.S. 047	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
0	27							

NOTE: Date & initial all entries

Date: Wednesday, 1/24/2007 4:43:51 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH AFT X-TUBE ASSEMBLY

Job Number: 30420

Part Number: D212664201

Job Number:



Seq. #:

Machine Or Operation:

Description :

LPI as per ASTM 1417 Level 2

Attach copy of NDT results to work order

20.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage Ensure copy of NDT results attached to work order.

07/10/19

21.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: DIMENSIONAL CHECK

Inspect for damage & ensure results are as per Dwg D212-664-241

07/10/19

22.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

RT 07-10-20

} RT 07-10-20

23.0

QC14

Inspect Spray Paint



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

ml 07 10 23 (1)

24.0

D2856600

Abrasion Strip



Comment: Qty.: 0.8400 f(s)/Unit Total : 0.8400 f(s)

Pick:

Qty Part number Description Batch

2 D2856-600-1009 Abrasion Strip

4 D3595-063-530

35125

~~07/10/19~~

ml 07 10 23

25.0

D29401

Support



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2940-1

Support

32780

ml 07 10 23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



Date: Wednesday, 1/24/2007 4:43:51 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH AFT X-TUBE ASSEMBLY

Job Number: 30420

Part Number: D212664201

Job Number:



Seq. #:

Machine Or Operation:

Description:

26.0

MS2192028

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-28

Clamp M104423

ml 01 10 23

27.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI-035 using DT8582

Install supports using  
Magnabond

Time: 9:00 AM

B/N M104677

2-Install supports and clamps as per Dwg D212-664-241. Torque clamps to 80-100 in lb.

ml 01 10 23

28.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

29.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

30.0

D34281

Placard



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Placard

Batch: M26249

SP

31.0

AN640A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Bolt

Batch: M104374

M104517

SP

32.0

AN641A

Bolt



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Bolt

Batch: M100743

7/10/25 SP

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☐ No ☒ DQA: DD Date: 8/18/26  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 1/24/2007 4:43:52 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH AFT X-TUBE ASSEMBLY

Job Number: 30420

Part Number: D212664201

Job Number:



Seq. #:

Machine Or Operation:

Description :

33.0

AN960JD616

Washer



Comment: Qty.: 18.0000 Each(s)/Unit Total : 18.0000 Each(s)

Washer

Batch: M104745

M105125

sq

34.0

MS21042L6

Nut



Comment: Qty.: 6.0000 Each(s)/Unit Total : 6.0000 Each(s)

Nut

Batch: M107374

7/10/25

sq

1x

35.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

7/10/26

36.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Identify and pack for shipping as per PPP D212-664-201

Rev C 7/10/26

1x

37.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

1  
207/10/26

Job Completion



U 7/10/26

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	<b>30420</b>
<b>Description:</b> Crosstube Assembly (205/212 High Aft)		<b>Part Number:</b>	<b>D212-664-241</b>
<b>Inspection Dwg:</b> D212-664-241 <b>Rev:</b> B		<b>Page 1 of 1</b>	

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	0.200	—			
	R0.063	+/-0.010	R0.063	—			
	2.990	+0.005/-0.000	2.991	—			
	5.237	+/-0.030	5.237	—			
	2.600	+0.005/-0.000	2.601	—			
	2.686	+0.005/-0.000	2.688	—			
	2.770	+0.005/-0.000	2.771	—			
	2.854	+0.005/-0.000	2.856	—			
	2.938	+0.005/-0.000	2.940	—			
	3.021	+0.005/-0.000	3.025	—			
	3.133	+0.005/-0.000	3.135	—			
	3.179	+0.005/-0.000	3.181	—			
SIDE B	0.200	+/-0.010	0.200	—			
	R0.063	+/-0.010	R0.063	—			
	2.990	+0.005/-0.000	2.991	—			
	5.237	+/-0.030	5.237	—			
	2.600	+0.005/-0.000	2.602	—			
	2.686	+0.005/-0.000	2.690	—			
	2.770	+0.005/-0.000	2.775	—			
	2.854	+0.005/-0.000	2.859	—			
	2.938	+0.005/-0.000	2.940	—			
	3.021	+0.005/-0.000	3.026	—			
	3.133	+0.005/-0.000	3.137	—			
	3.179	+0.005/-0.000	3.184	—			
	124.36	+/-0.020	124.37	—			

<b>Measured by:</b>	<i>mf</i>	<b>Audited by:</b>	<i>DP</i>	<b>Prototype Approval:</b>	N/A
<b>Date:</b>	07/01/30	<b>Date:</b>	07/09/20	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D412-664-201)	KJ/JLM	<i>JA</i>
B	06.03.09	Tolerance for 5.237 was +/-0.001	KJ/JLM	<i>mf</i>



DESIGN PH	DRAWN BY PH	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D212-664-241	REV. B SHEET 1 OF 3
DATE 05.02.04		TITLE CROSSTUBE ASS'Y (205/212 HI AFT) NTS	
A	00.12.12	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	

RELEASED  
05.06.09 [Signature]

Qty	Part Number	Description
X	D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
1	D6006-129	CROSSTUBE
2	D2940-1	SUPPORT
2	D2856-600-1009	ABRASION STRIP
4	MS21920-28	CLAMP

#### GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) MATERIAL: MANUFACTURED FROM D6006-129  
FINISHED LENGTH = 124.36±0.020 ✓
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-600-1009 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2940-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) IT IS OPTIONAL TO SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX 241/291 SEALANT.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

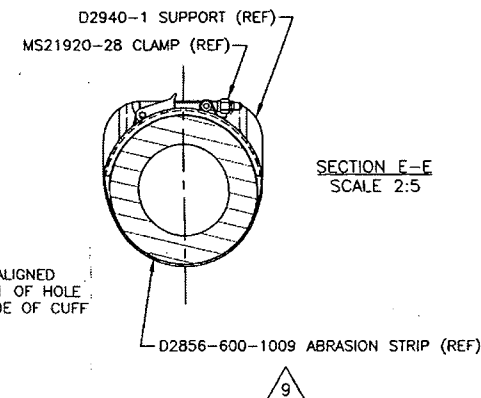
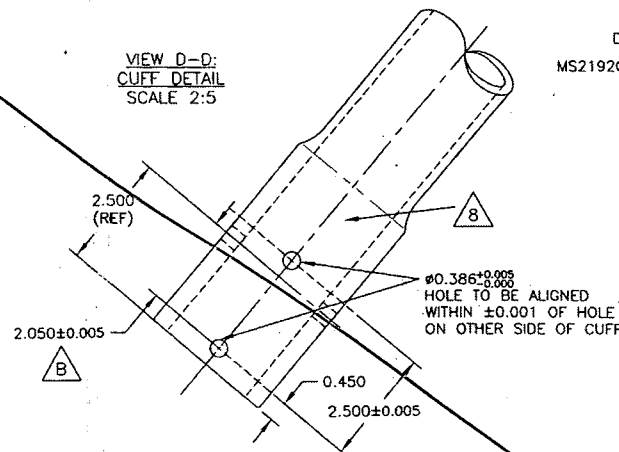
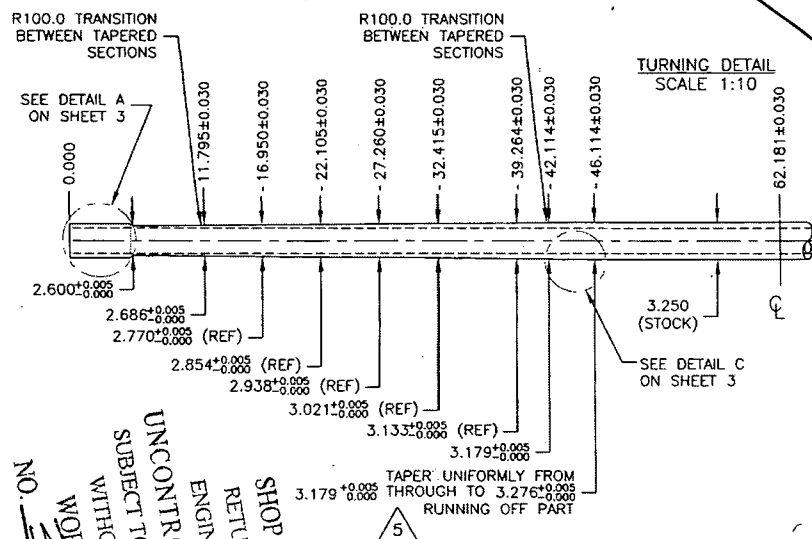
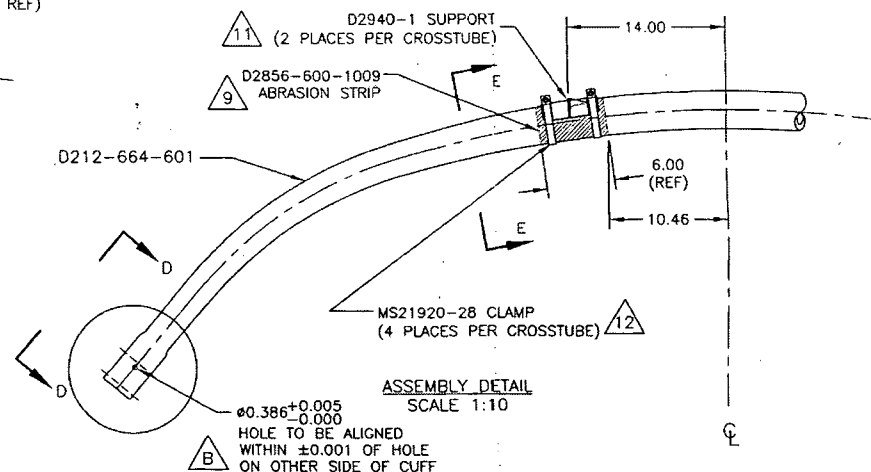
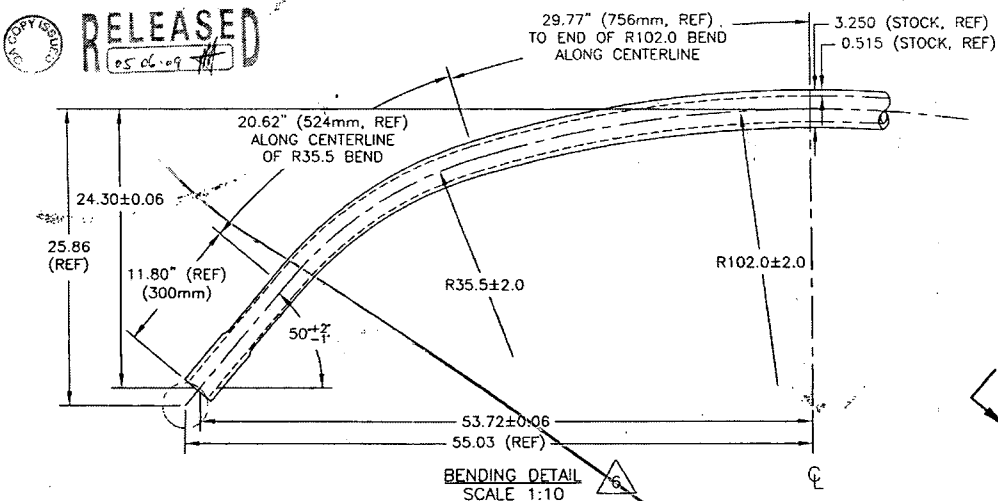
SHOP COPY  
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SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 30420

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		CHECKED	APPROVED	DRAWING NO.	SHEET 2 OF 3
		DATE		D212-664-241	
				TITLE	SCALE
		05.02.04		CROSSTUBE ASS'Y (205/212 HI AFT)	1:10

NO. 30420

WORK ORDER

SUBJECT TO AGREEMENT

UNCONTROLLED COPY

ENGINEERING

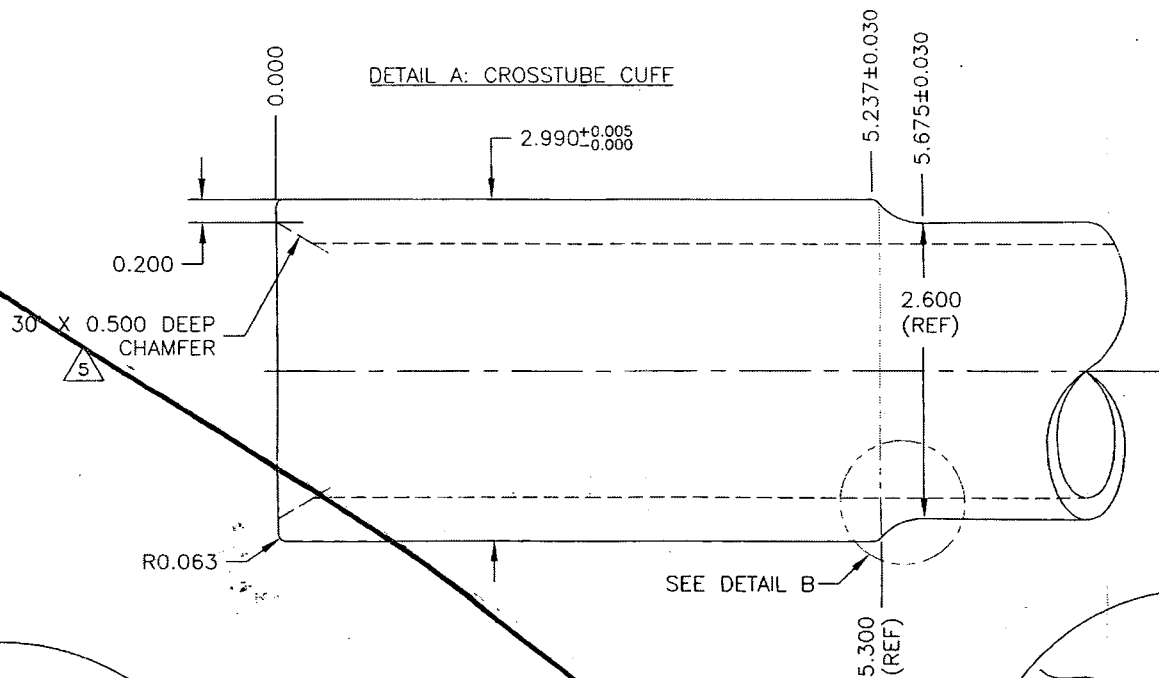
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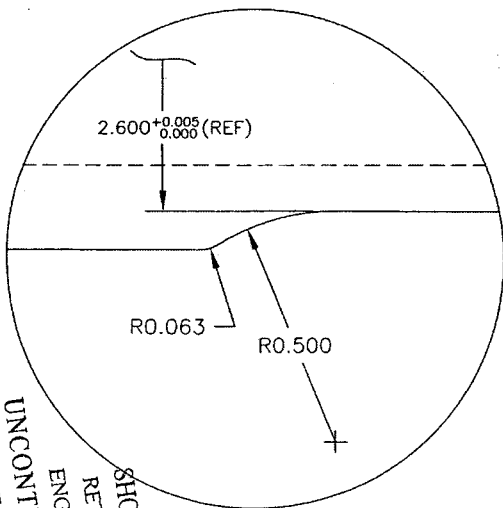
RELEASED  
05-06-09



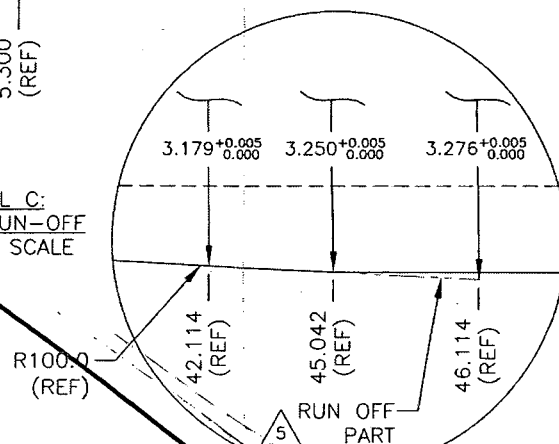
DETAIL A: CROSSTUBE CUFF



DETAIL B: CUFF  
TRANSITION  
SCALE 4:1



DETAIL C:  
TAPER RUN-OFF  
NOT TO SCALE



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THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	APPROVED	DRAWING NO. 0212-664-241	REV. B SHEET 3 OF 3
DATE 05.02.04		TITLE CROSSTUBE ASS'Y (205/212 HI AFT)		SCALE 1:1	

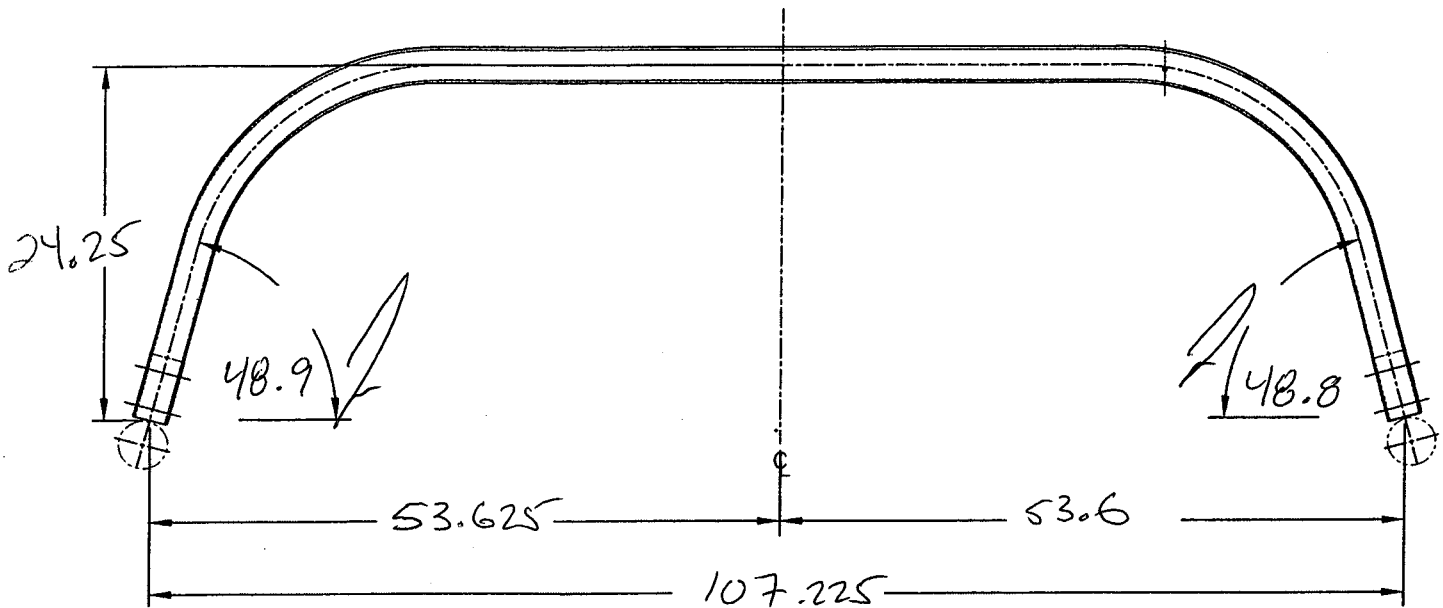
NO. 30420  
WORK ORDER  
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<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	30420
<b>Description:</b> Crosstube High Aft (205/212)		<b>Part Number:</b>	D212-664-201
<b>Inspection Dwg:</b> D212-664-241 <b>Rev:</b> C		<b>Page 1 of 1</b>	

Required Dimension	Min	Max
Height	24.17	24.43
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments

QC15 Inspection	<i>[Signature]</i>
Date	07.10.16

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. C	KJ/JLM	<i>[Signature]</i>



## LIQUID PENETRANT TEST REPORT

P- 08665

PAGE 1 OF 1

CLIENT: Dart Aerospace  
ATTENTION: Bill Beckett  
ADDRESS: 1270 Aberdeen Street  
Hawkesbury Ontario K6A 1K7  
DATE: October 19, 2007  
ACUREN JOB NO.: 187-07-01157  
PO/NO:  
WORK LOCATION: as shown  
ACCEPTANCE STD: E1417-99  
REV./DATE: 99

PROJECT: Cross Tube Inspection  
ITEM(S) EXAMINED: Inspection of X-tube assemblies, 212/205 high Fed, 212/205 High AFT, 206L Fwd, 412 High AFT, 212/205 high Fed, as listed Below

OB DESCRIPTION: PROCEDURE NO. LT-0002 REV./DATE: E1417-99  
TECHNIQUE NO. LT-0002 REV./DATE:  
ART NO.: X-Tube assemblies as listed. MATERIAL: 7075 Aluminum THICKNESS: < 1/2"  
SCOPE: 100% examination of all outer surfaces per standard ASTM E1417-99  
Type I, Method A, Level 2.

## TEST DETAILS

METHOD: ☒ FLUORESCENT ☐ VISIBLE  
WATER WASH: ☒ SOLVENT REMOVABLE: ☐ POST EMULSIFIED: ☐  
FAMILY BRAND: Magnaflux Batch # 07F046  
BLACK LIGHT S/N: 8168 OUTPUT > 1000  $\mu$ W/cm<sup>2</sup> AMBIENT < 2 fc  
PENETRANT: Zyglo ZL67 MINIMUM DWELL TIME: 10 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE  
PENETRANT REMOVER: Water MINIMUM DRY TIME: > 10 MIN. OTHER:  
DEVELOPER: NA MINIMUM DWELL TIME: 10 MIN. LIGHT METER S/N: 1098266 CAL DUE DATE: 8/9/13  
DEVELOPER TYPE: ☐ NON AQUEOUS ☐ AQUEOUS ☐ DRY

## TEST SURFACE

SURFACE CONDITION: ☐ AS GROUND ☐ AS WELDED ☐ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL  
SURFACE TEMPERATURE: ☐ < -4°C/20°F ☐ -4°C/20°F TO 10°C/50°F ☒ 10°C/50°F TO 52°C/125°F ☐ > 52°C/125°F

RESULTS- ☐ METRIC ☒ IMPERIAL

ITEM	COMMENTS	ACCEPT	REJECT
P.N. D212664100 x 1 piece	Job # 34929		
P.N. D212664201 x 1 piece	Job # 30420		
P.N. D206667103 x 2 pieces	Job #'s 34926 and 34139		
P.N. D412664203 x 1 piece	Job # 33537		
P.N. D212664101 x 2 pieces	Job #'s 34931 and 34930		
All Seven (7) Units Acceptable.			

## Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

## Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

CLIENT REPRESENTATIVE: *Matthew Woodcock* SIGNATURE: *Matthew Woodcock* DTR # 187-07-01157  
TECHNICIAN (SIGNATURE): *Mark Westover*  
NAME (PRINT): Mark Westover  
CGSB LEVEL: 2 SNT LEVEL: 2  
CGSB REG. NO.: 5323  
1<sup>ST</sup> TECHNICIAN  
2<sup>ND</sup> TECHNICIAN  
CGSB LEVEL: SNT LEVEL:  
CGSB REG. NO.:  
REPORT REVIEWED BY:  
NAME: INITIALS:

**DART**

DESIGN <i>PH</i>	DRAWN BY <i>PH</i>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D212-664-241	REV. C SHEET 1 OF 3
DATE 07.03.08		TITLE CROSSTUBE ASS'Y (205/212 HI AFT) NTS	
A	00.12.12	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	
C	07.03.08	REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	

**RELEASED**  
*07.04.24*  
PER E.C.N. 0239

Qty	Part Number	Description
X	D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
1	D6006-129	CROSSTUBE
2	D2940-1	SUPPORT
4	D3595-063-530	RUBBER CUSHION
4	MS21920-28	CLAMP (OR MS21920-30)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

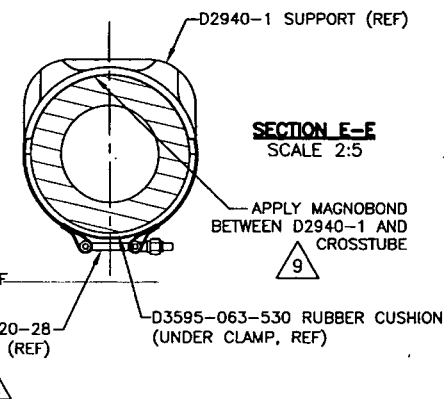
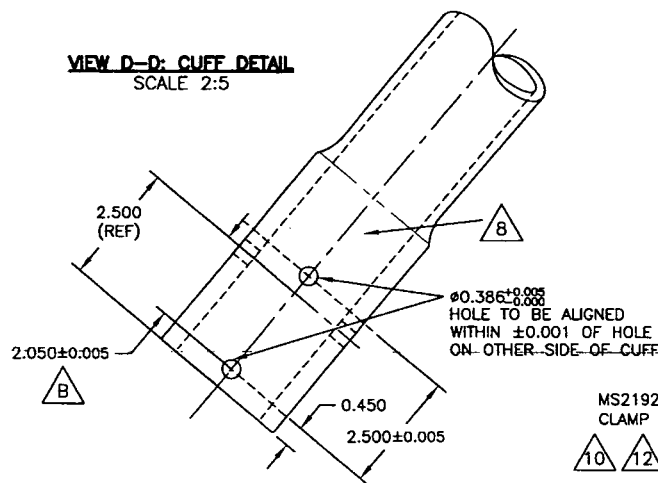
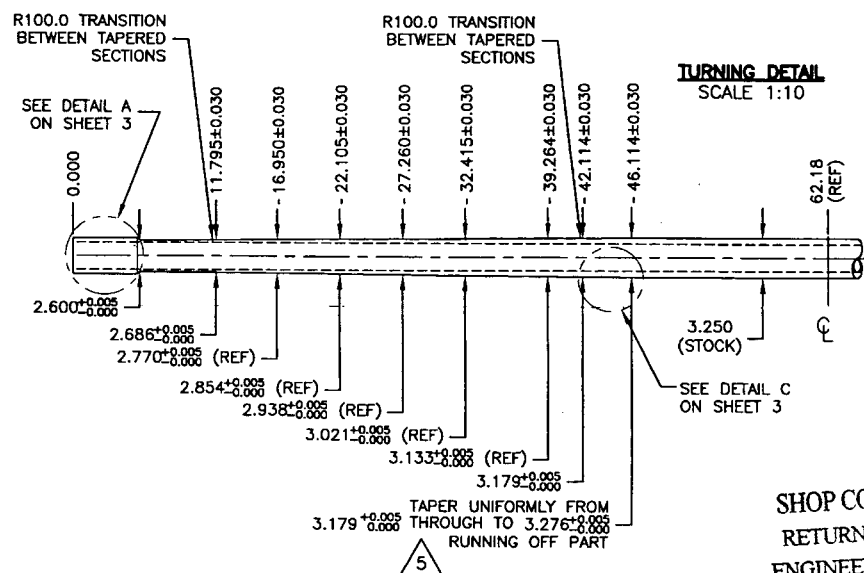
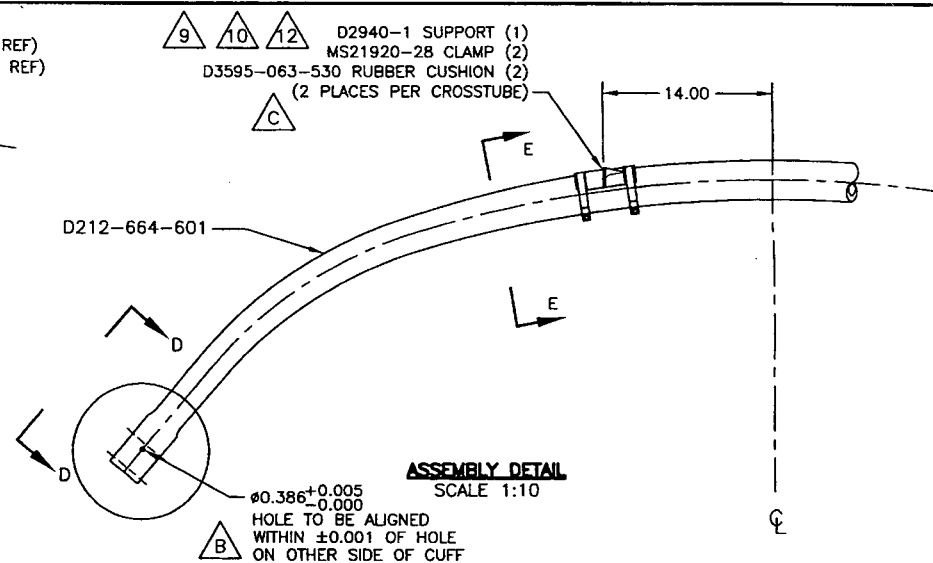
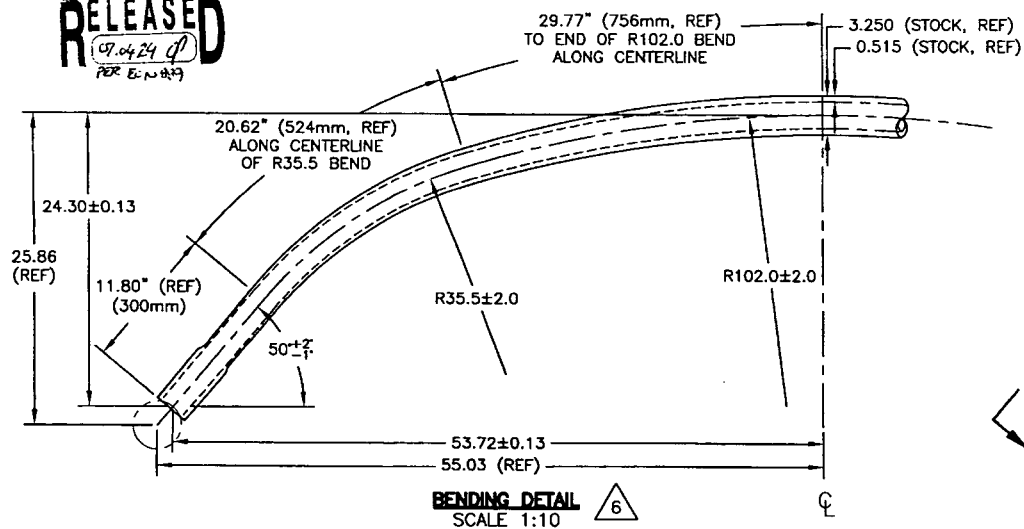
**GENERAL NOTES:**

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) MATERIAL: MANUFACTURED FROM D6006-129  
FINISHED LENGTH = 124.36±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 10) INSTALL MS21920-28 CLAMPS WITH D3595-063-530 RUBBER CUSHIONS TO SECURE D2940-1 SUPPORT ON TOP SIDE OF CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT  
**NOTE:** MS21920-30 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.





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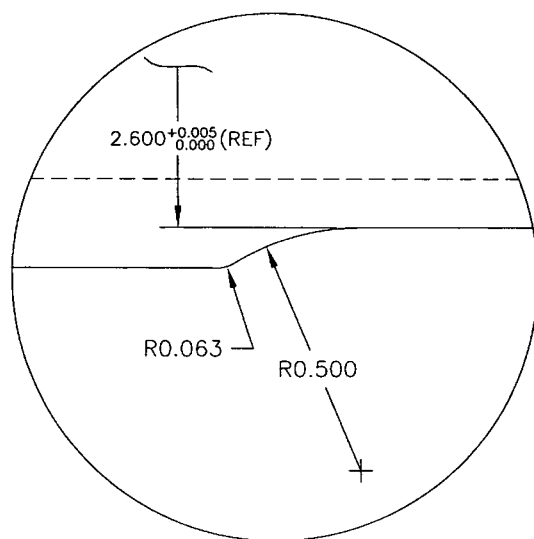
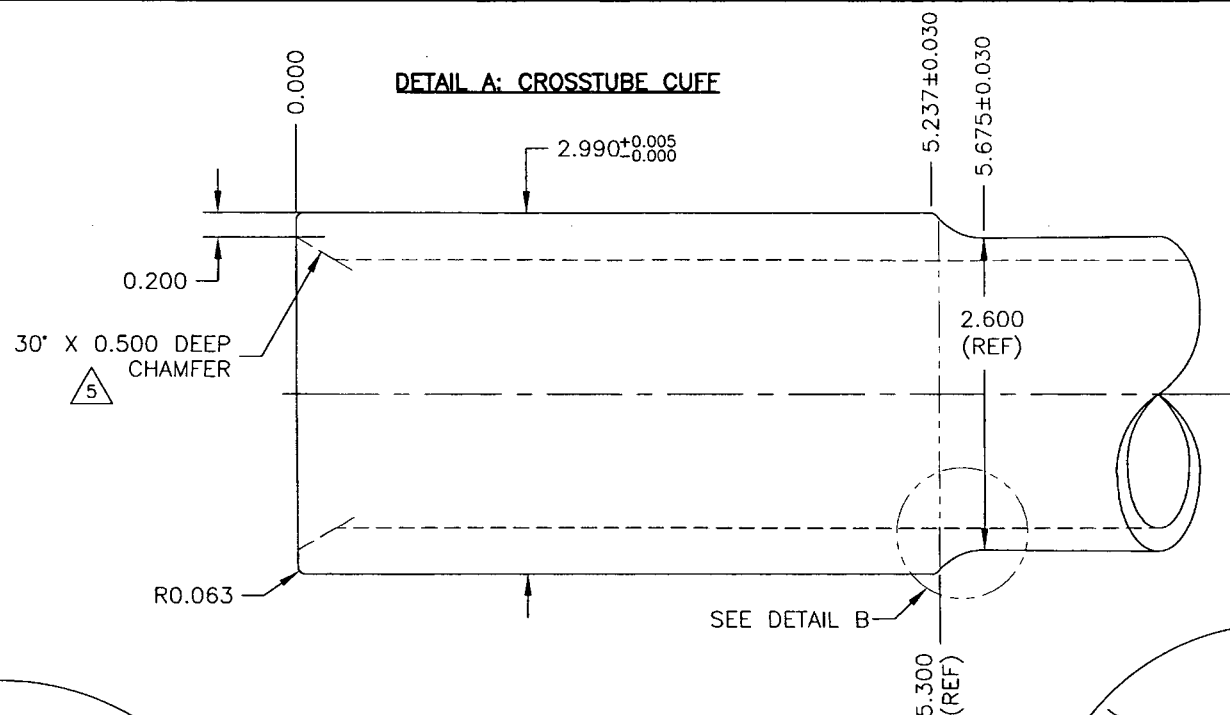


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	DATE	APPROVED	D212-664-241	SHEET 2 OF 3
07.03.08		TITLE	SCALE	
		CROSSTUBE ASS'Y (205/212 HI AFT)	1:10	

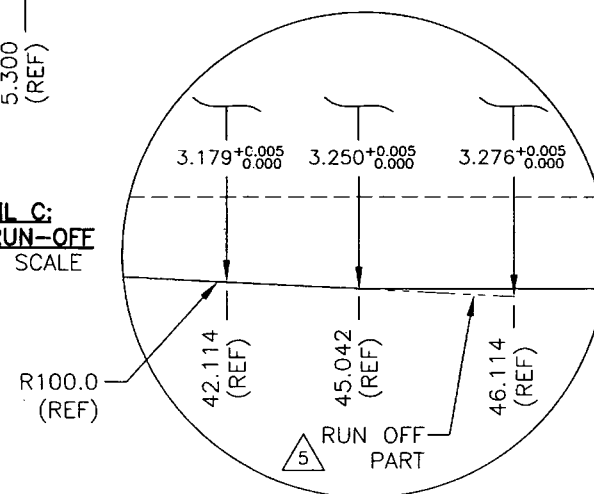
**RELEASED**  
07.04.24  
PER ECN 885

**DETAIL A: CROSSTUBE CUFF**



**DETAIL B: CUFF  
TRANSITION**  
SCALE 4:1

**DETAIL C:  
TAPER RUN-OFF**  
NOT TO SCALE



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DATE		07.03.08		DRAWING NO.	REV. C
				D212-664-241	SHEET 3 OF 3
				TITLE	SCALE
				CROSSTUBE ASS'Y (205/212 HI AFT)	1:1